

## CLAIMS

1. A method for the isolation of stem cells of a mammal, the method comprising:

obtaining a sample of cells from the mammal;

5 sorting, from the sample, cells that express  $\beta_2$ -microglobulin from cells that do not express  $\beta_2$ -microglobulin;

selecting stem cells from the sample of cells that do not express  $\beta_2$ -microglobulin.

2. The method of claim 1, wherein the step of sorting comprises sorting by

10 fluorescent activated cell sorting.

3. The method of claim 1, wherein the step of sorting comprises sorting by magnetic bead cell sorting.

4. The method of claim 1, wherein the step of sorting comprises sorting by double magnetic bead cell sorting.

15 5. The method of claim 1, wherein the step of selecting stem cells further comprises sorting, from the sample of cells that do not express  $\beta_2$ -microglobulin, cells that express a stem cell marker from cells that do not express a stem cell marker.

6. The method of claim 1, wherein the step of selecting stem cells from the sample further comprises selecting pluripotent stem cells from the sample.

20 7. The method of claim 1, wherein the step of selecting stem cells from the sample further comprises selecting embryonal stem cells from the sample.

8. The method of claim 5, wherein the stem cell marker is a protein expressed by one or more genes encoding the major histocompatibility complex.

9. The method of claim 8, wherein the one or more genes encode human leukocyte antigens.

10. The method of claim 8, wherein the marker is Thy-1.

11. The method of claim 8, wherein the marker is selected from the group consisting of RT1A, RT1B, and RT1D.

12. The method of claim 8, wherein the marker is selected from the group consisting of flt-3, CD 34, c-Kit, and CD38.

13. The method of claim 5, wherein the step of selecting stem cells further comprises sorting by fluorescent activated cell sorting.

14. The method of claim 5, wherein the step of selecting stem cells further comprises sorting by magnetic bead cell sorting.

15. The method of claim 5, wherein the step of selecting stem cells further comprises sorting by double magnetic bead cell sorting.

16. The method of claim 1, wherein the sample of cells is obtained from an adult mammal.

17. The method of claim 1, wherein the sample of cells is obtained from a fetus.

18. The method of claim 1, wherein the sample of cells is obtained from bone marrow.

19. The method of claim 1, wherein the sample of cells is obtained from the liver of a mammal.

20. The method of claim 1, wherein the sample of cells is obtained from the brain of a mammal.

21. A method for the isolation of stem cells of a mammal, the method comprising:

obtaining a sample of cells from the mammal;

5 sorting, from the sample, cells that express  $\beta_2$ -microglobulin from cells that do not express  $\beta_2$ -microglobulin;

sorting, from the sample of cells that do not express  $\beta_2$ -microglobulin, cells that express a stem cell marker from cells that do not express a stem cell marker.

22. The method of claim 21, wherein the step of sorting comprises sorting by fluorescent activated cell sorting.

23. The method of claim 21, wherein the step of sorting comprises sorting by magnetic bead cell sorting.

24. The method of claim 21, wherein the step of sorting comprises sorting by double magnetic bead cell sorting.

25. The method of claim 21, wherein the stem cell marker is a protein expressed by one or more genes encoding the major histocompatibility complex.

26. The method of claim 25, wherein the one or more genes encode human leukocyte antigens.

27. The method of claim 25, wherein the marker is Thy-1.

28. The method of claim 25, wherein the marker is selected from the group 20 consisting of RT1A, RT1B, and RT1D.

29. The method of claim 25, wherein the marker is selected from the group consisting of flt-3, CD 34, c-Kit, and CD38.

30. The method of claim 21, wherein the sample of cells is obtained from an adult mammal.

31. The method of claim 21, wherein the sample of cells is obtained from a fetus.

32. The method of claim 21, wherein the sample of cells is obtained from bone marrow.

5 33. The method of claim 21, wherein the sample of cells is obtained from the liver of a mammal.

34. The method of claim 21, wherein the sample of cells is obtained from the brain of a mammal.

10 35. The method of claim 21, wherein the cells that express a stem cell marker are pluripotent stem cells.

36. The method of claim 21, wherein the cells that express a stem cell marker are embryonal stem cells.

37. An isolated stem cell that does not express  $\beta_2m$ .

38. The isolated stem cell of claim 37, wherein the cell expresses Thy-1.

15 39. The isolated stem cell of claim 38, wherein the cell is derived from bone marrow of a mammal.

40. The isolated stem cell of claim 38, wherein the cell is derived from the liver of a mammal.

20 41. The isolated stem cell of claim 37, wherein the stem cell is a pluripotent stem cell.

42. The isolated stem cell of claim 37, wherein the stem cell is an embryonal stem cell.